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Behaviour Change Technique Taxonomy – a method of describing head and neck cancer dysphagia intervention delivery

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Abstract

Purpose of review

The purpose of the review is to examine the current state of the art of dysphagia intervention delivery description and to propose use of a new tool to facilitate this: the behaviour change technique taxonomy version 1 (BCTTv1).

Recent findings

Describing intervention delivery is difficult and published research in the field of speech and language therapy (SLT) does not include detail on this key aspect of research protocols. Interventions themselves are often poorly delineated and a way is needed of classifying how these interventions are delivered in practice.

Summary

Use of the BCTTv1 would facilitate clarity and transparency in intervention delivery description and have positive implications for research, clinical practice and undergraduate teaching if employed by the SLT profession.

Key words

Dysphagia, rehabilitation, intervention delivery, behaviour change,

Introduction

The sequelae of head and neck cancer (HNC) treatment in terms of consequences for swallowing function are well documented, and there is a growing body of research investigating the impact of Speech & Language Therapy (SLT) dysphagia intervention in this area. However, the recently published Cochrane review of the effect of therapeutic exercises on post-treatment swallowing in people treated for advanced stage HNC identifies issues with the quality of the evidence base as it stands and the many challenges that face head and neck dysphagia intervention researchers and practitioners moving forward (1). In this paper we will propose the use of a tool, which has yet to be widely applied to SLT dysphagia intervention, yet could be a powerful addition to dysphagia intervention design and clinical practice.

SLT dysphagia intervention

In the field of dysphagia, the term 'intervention' includes all rehabilitation, therapeutic strategies and interactions that follow assessment and diagnosis of dysphagia, including behavioural management. Traditionally the dysphagia literature takes a narrow view of the term 'behavioural management', identifying only classic impairment-based biomedical treatment approaches in this domain (2-4). More recently there has been an emerging trend of researchers considering the wider impact of dysphagia and beginning to recommend a more holistic approach to intervention, focussing on 'life effects' rather than just 'health effects' of the disorder, particularly in the context of HNC survivorship (5-8).

In their critique of dysphagia rehabilitation exercises, Langmore and Pisegna (9) comment that the majority of dysphagia exercises lack sufficient evidence of long-

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term improvement in swallowing function. This lack of evidence is demonstrated by recent reviews of dysphagia intervention studies, which show that there is a general lack of methodological rigour in the literature with heterogeneity of interventions and poor intervention delineation, rendering meta-analyses impossible (7, 9-12). These reviews have their own weaknesses however, tending to focus on gross analysis of study design, giving no consideration to aspects of treatment fidelity, such as provision of sufficient protocol detail to allow replication, or discussion of patient adherence, treatment integrity and differentiation (13, 14).

Dysphagia interventions are not just about delivering impairment-level exercises, swallowing techniques or texture modification recommendations to patients. In the context of the growing healthcare burden of chronic disease, including cancer survivorship, Speech & Language Therapists (SLTs) are moving away from being impairment based 'fixers' to becoming 'enablers' to support people with long-term conditions (15). The complex role of the SLT also involves provision of advice, information and support, communication about risk, monitoring, management of expectations, and encouraging and facilitating psychological adjustment and adaptation. SLTs also have a key role in supporting the patient and their carers in decision-making around complex issues such as non-oral feeding, as well as providing education and training to family, carers and the wider multidisciplinary team (6, 12, 16, 17). It is notable that this diverse palette of intervention goals is not reflected in the current intervention evidence base.

The fact that there is currently no systematic way of describing the range of interventions and delivery techniques SLTs use with their clients with dysphagia is

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significant**.** As a profession SLT is not used to operationalising interventions explicitly, i.e. formalising the process of intervention delivery separately from content. There is a tendency to focus on the units of intervention, or therapeutic strategies as described above, rather than how they are delivered. This means not only that the richness of clinical practice is not reflected in dysphagia intervention literature, but also that intervention protocol delineation in research studies is not standardised, affecting the validity of findings as the 'active ingredient' in effecting change is unclear.

Intervention protocols should be standardised to facilitate intervention design and evaluation, and to allow the complex issues of study treatment fidelity, patient adherence and the impact of therapy dynamics or contextual factors on treatment effectiveness to be investigated and addressed (18). Before protocols can be standardised however, a method must be devised to describe both what the interventions contain and how they are delivered. Recent studies reporting interventions for dysphagia, and protocols published for work in progress in HNC give little information about intervention content and delivery, making replicability and assessment of treatment fidelity impossible (19-23)

Describing dysphagia intervention: the status quo

Behaviour change is required for rehabilitation to be effective (24). Although classic dysphagia interventions are classified in the literature as 'behavioural', traditionally SLT as a profession has not defined intervention content or delivery in the language of behaviour change originally developed in the field of Health Psychology. An OVID database literature search shows no SLT intervention study in any clinical area that

discusses dysphagia intervention explicitly in terms of behaviour change techniques (BCTs), or that details all of the specific techniques used to deliver intervention protocols. Existing SLT intervention studies only make oblique reference to BCTs. This is despite the fact that many techniques frequently used by SLTs to deliver therapeutic strategies and engage patients could be classed as BCTs. For example, Logemann (2), in her frequently cited dysphagia text, describes very general therapy delivery techniques such as 'assistance' or 'cheerleading' that could be interpreted and coded as BCTs such as 'instruction on how to perform the behaviour' or 'feedback on behaviour' (25). In their 2015 study investigating respiratory-swallow training with HNC, Martin-Harris et al, (26) similarly describe aspects of their intervention protocol which could be coded as BCTs, for example goal setting and biofeedback, but do not explicitly label them as such. Mortensen et al, (19) provide brief details of intervention content in their report of a prospective randomised trial evaluating the impact of prophylactic swallowing exercises in patients with HNC, describing aspects that could be inferred as BCTs such as 'behavioural practice' and 'instruction on how to perform the behaviour' however, there is insufficient information provided to allow full analysis and understanding of the intervention protocol involved.

Michie et al (27) define a BCT as a "replicable component of an intervention designed to alter or redirect causal processes that regulate behaviour". As Currie et al (28) describe, BCTs employed in interventions are the techniques used to deliver the intervention e.g. using the technique of biofeedback and modelling to teach a supraglottic swallow manoeuvre. If specific dysphagia therapeutic strategies, such as

exercises or diet modification, can be classed as the theoretical 'bricks' of our interventions, then the BCTs are the behavioural 'mortar' that allow them to be cohesively delivered and for the SLT and patient to work together to achieve their goals. It could be argued that all SLT intervention with patients is mediated by BCTs; however these techniques are not a novel development for SLT, rather they are currently being used but not being defined or acknowledged in a systematic way in the language of behaviour change. The classification and detailed description of behaviour change techniques used in delivering dysphagia interventions, in the form of a taxonomy, would clarify how SLTs deliver their interventions, and facilitate attempts at establishing what the active ingredients of an intervention are through experimental manipulation of intervention content (25, 29, 30).

Classifying intervention is traditionally difficult for all rehabilitation healthcare professionals, including SLT. No universal language of concepts and terms to describe and communicate about treatment exists, neither does a taxonomy of interventions using this language (31). In recent years three multidisciplinary studies have been published focussing on ways to improve intervention description. Dijkers et al (32) describe a major project currently underway in the USA with the aim of developing a cross-disciplinary 'rehabilitation treatment taxonomy'. This project includes SLT rehabilitation (33), however it is still in its infancy and is currently at the theoretical stage, with practical constraints and issues not yet addressed, and with no documented consideration to date of separation of therapeutic strategies from how they are delivered. Whiteneck et al (34) describe the 'SCIRehab' project: a multidisciplinary project with the aim of collecting detailed

information about the content of rehabilitation interventions for spinal cord injury. That project included an SLT-specific arm, which involved the team devising a communication and swallowing intervention taxonomy (35). This however included only explication of therapeutic strategies used, without consideration of the distinction between these and delivery techniques. DeJong et al (36) carried out a project to develop a taxonomy of techniques to facilitate investigation of stroke rehabilitation practice and how it relates to patient outcomes. This study differentiates intervention delivery techniques from therapeutic strategies, however with a focus on the latter, and only in an in-patient setting. Interventions included therefore may not reflect those used in outpatient or domiciliary work and the taxonomy cannot be considered to comprehensively cover all rehabilitation. There have been no published studies to date attempting to specifically describe SLT dysphagia intervention with patients with HNC.

Moving forward with intervention description

As stated by Lorencatto et al (37): "… unless we know what was delivered, we cannot know what worked in effective interventions" (p.528). Thinking of HNC dysphagia intervention delivery in terms of BCTs would allow investigation of technique effectiveness, as has been demonstrated in work in other disciplines. For example, Dombrowski et al (38) and Michie et al (39) systematically reviewed the literature in the areas of obesity and excessive alcohol consumption respectively, and found that specific BCTs were associated with better outcomes. In a meta-analysis of the intervention literature for smoking cessation in COPD, Bartlett et al (40) found that certain BCTs were associated with significantly larger effect sizes. Therefore, a

potential starting point for the SLT profession would be to adopt and adapt an existing taxonomy used by other healthcare professionals. This approach would also maximise the opportunities for inter-disciplinary communication and collaboration.

Behaviour Change Technique Taxonomy version 1

Behaviour Change Technique Taxonomy version 1 (BCTTv1) (25) is a systematically developed taxonomy of 93 distinct BCTs developed through a process of consensus by a group of behaviour change experts and researchers with backgrounds in psychology, health sciences and community health. The techniques were identified from an extensive review of behaviour change literature, and were operationalized during their development to each have their own descriptor and examples. See table 1 for examples of BCTs included in the taxonomy. BCTTv1 is the first attempt at providing a consistent language to describe behaviour change intervention delivery, but is an acknowledged work in progress with future refinements expected (25). Currie et al (28) suggest that BCTTv1 enhances reliability and validity of interventions by allowing standardisation of techniques across studies. BCTTv1 has been used in several treatment studies to help delineate interventions in work looking at coding interventions post hoc to specify content so that effective techniques could be identified. Researchers have used BCTTv1 to code BCTs used in interventions in the fields of HIV care (41), musculoskeletal pain (42) and health promotion in pregnancy (28).

The language used in health behaviour theories shared by BCTTv1 could be applicable to SLT HNC dysphagia intervention. To date the only SLT dysphagia-specific published work directly referencing BCTTv1 is that of Govender et al (24): a

protocol for a systematic review identifying BCTs in swallowing interventions for HNC patients. The authors however take a limited view of what constitutes dysphagia intervention, considering only devices, exercises, oral intake recommendations and swallowing strategies, and do not specify whether the review will consider psychosocial aspects of SLT interventions, or input from family, carers and the multi-disciplinary team (MDT).

[TABLE 1]

Mapping dysphagia intervention delivery techniques to the BCTTv1: what is required?

The authors of BCTTv1 have the expectation that further development and refinement of the taxonomy will occur when it is applied to diverse fields (43). A study carried out as part of an unpublished MSc dissertation (44) has provided initial evidence that it is feasible to produce a SLT adaptation of this taxonomy to accommodate dysphagia intervention delivery techniques. However this work suggested that there are a number of factors that need to be addressed when attempting to make a BCTTv1 SLT adaptation, in terms of terminology, BCT description and generating SLT-specific content. These results concur with previous research that has highlighted that BCT distinctiveness is variable (45), that some BCTs are more challenging to identify reliably and code than others (46) and Michie et al's (43) findings that there is a subset of BCTs which are particularly unclear and require further refinement.

An augmented BCTTv1 with SLT-specific examples would have many significant applications for both clinical practice and research in the field of HNC and beyond,

e.g. facilitating undergraduate training, record keeping, inter-professional communication, intervention description, invention, replication and testing, and evidence synthesis. It would make our research more robust thereby strengthening our evidence base and, ultimately helping us to answer clinically pressing questions around topics such as prophylactic intervention and remediation of refractory post treatment dysphagia.

The future

Adapting the BCTTv1 for SLT

BCTTv1 is a work in progress. The taxonomy will undergo further expansion, and SLT data should contribute to the 'international consortium' to develop version two envisaged by Michie et al (43). In order to do this, in-depth investigation and development is required, using triangulation of methods and both 'top-down' and 'bottom-up' approaches to ensure that all aspects of SLT intervention and all necessary BCTs are represented, with clear definitions and valid SLT-specific examples. This could include coding content of intervention studies, retrospective case note reviews, and described, live or filmed interventions, as well as through consensus techniques such as the Delphi or Nominal techniques (37, 39, 41, 47, 48).

Intervention design

During the process of intervention design, individual BCTs should be considered in the context of effectiveness. Many questions remain unanswered: in SLT, are particular BCTs associated with improved intervention effectiveness as has been shown in other disciplines (38-40)? Are certain BCTs associated with higher

treatment fidelity or patient adherence? Consideration could be given to whether specific BCTs should be selected on a patient preference basis: for example BCTs selected may depend on patient priorities and the stage they are at in their rehabilitation, echoing the variation in patient goals reflected in the evidence base (49). BCTTv1 is a tool rather than an outcome, so does not provide information on the efficacy and effectiveness of dysphagia interventions themselves, e.g. exercises and manoeuvres. Continued research is required in this area with the understanding that if the BCTs used to deliver interventions are well-defined, more variables can be controlled in intervention studies making them more robust.

Conclusion

Researchers and clinicians working in the field of HNC have a strong commitment to evidence based practice. As many practitioners in this field are research active, they have an opportunity to shape the future of dysphagia intervention research as a whole, working on improving treatment fidelity and adherence issues highlighted by recent reviews of the intervention literature. Considering dysphagia intervention delivery in terms of BCTs and BCCTv1 and incorporating it into future study design provides an opportunity to expand the focus from content to include examination of the process of intervention. This would provide a way of consistently and transparently describing and analysing interventions and their delivery in all their intricacy, ultimately helping us to provide a better service to our patients who are at the heart of what we do.

Key points

- Intervention delivery is different from the intervention itself. Both need to be explicitly defined in research protocols and clinical decision making
- Dysphagia intervention often takes the form of behaviour change
- A taxonomy of behaviour change techniques (BCTs) employed to effect change with patients would facilitate description and clarity
- BCTTv1 is an existing taxonomy of BCTs already being used by other professions to describe intervention delivery and could be applied to dysphagia intervention delivery in head and neck cancer

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Conflicts of interest
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Papers of particular interest, published within the annual period of review, have been highlighted as:

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